cannot be said until a thorough examination by an expert has been made.

ACCORDING to the *San Francisco Courier* the great glacier of Alaska is moving at the rate of a quarter of a mile per annum. The front presents a wall of ice 500 feet in thickness; its breadth varies from three to ten miles, and its length is about 150 miles. Almost every quarter of an hour hundreds of tons of ice in large blocks fall into the sea, which they agitate in the most violent manner. The waves are said to be such that they toss about the largest vessels which approach the glacier as if they were small boats. The ice is extremely pure and dazzling to the eye; it has tints of the lightest blue as well as of the deepest indigo. The top is very rough and broken, forming small hills, and even chains of mountains in miniature. This immense mass of ice, said to be more than an average of a thousand feet thick, advances daily towards the sea.

IT is contemplated to use the electric light in Algiers for night work during harvest time, in order to escape the heat, which is almost murderous for Europeans, and is an obstacle to their carrying on agricultural work.

THE borings undertaken for scientific purposes in the shaft situated near the railway station of Koetzschau, about five miles from Lützen (Germany), have now reached the depth of 1500 metres. Observations of temperature are now being made in the shaft.

THE Norwegian Government has voted a sum of 50*l.* to Dr. O. J. Olsen for the prosecution of his studies of wild edible mushrooms.

THE education of girls in Russia does not appear to stand very high. According to the *Moskow Viedomoski* only 21 children out of 100 attending school were girls. The proportion varies with the religion. Thus, of Protestants the number was greatest, viz. 45·4 per cent.; of Jews, 34·1 per cent.; and of Roman Catholics, 14·4 per cent. The number is lowest amongst Greek Catholics, viz. 12·3 per cent.

THE additions to the Zoological Society's Gardens during the past week include a White-fronted Capuchin Monkey (*Cebus albifrons* ♂) from South America, presented by Mr. E. Luxmore Marshall; a Macaque Monkey (*Macacus cynomolgus* ♂) from India, presented by Mr. A. R. Brown; a Martinique Gallinule (*Ionornis martinicus*), captured at sea, presented by Mr. G. S. Webb; two Grey-breasted Parrakeets (*Bolborhynchus monachus*) from Montevideo, presented by Miss Buist; a Red and Blue Macaw (*Ara macao*) from Brazil, presented by Mr. J. W. Beswick Purchas; a Yellow Conure (*Conurus solstitialis*) from Venezuela, presented by Mr. Albert H. Nicholson; a Barn Owl (*Strix flammea*), British, presented by Mr. W. Ostle; an Æsculapian Snake (*Coluber æsculapii*) from Central Europe, presented by Miss Lenox Conyngham; a Domestic Sheep (*Ovis aries*, var. ♂) from Somali Land, deposited; two Larger Tree-Ducks (*Dendrocygna major*) from India, two Gould's Monitors (*Varanus gouldi*), two Great Cyclodus (*Cyclodus gigas*), two Carpet Snakes (*Morelia variegata*), three Diamond Snakes (*Morelia spilotes*) from New South Wales, received in exchange; a Japanese Deer (*Cervus sika*), three Pigmy Hogs (*Poreula salvania*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

COMETARY ORBITS.—Prof. J. G. Galle has formed a most useful and very complete catalogue of orbits of comets which have been calculated since the publication of the third edition of Olbers's "Methode zur Berechnung der Cometenbahnen" in 1864. This catalogue appears in Nos. 2665–66 of the *Astronomische Nachrichten*. In one table are collected orbits of comets before 1860, which have been more definitively determined during the past twenty years, with a few orbits of ancient comets computed for the first time or founded upon better data, including those observed by Toscanelli; in a second table are contained the most reliable orbits of all comets discovered since the year 1860. The elements are given in an approximate form only, but in the notes accompanying each table reference is made to the place of original publication. Prof. Galle's *résumé* will be of much service to the student in this branch of astronomy. It appears to have been drawn up on the suggestion of Prof. Krüger, seeing that there was no immediate intention of publishing a fourth edition of Olbers's celebrated treatise. Five newly-detected comets of short period figure in the second table.

BINARY STARS.—The following calculated angles and distances of several of the more rapidly revolving double-stars will serve to indicate how nearly measures made about the present time are represented by the best available orbits:—

Star	Epoch	Pos.	Dist.	Authority for orbit
		°	″	
ζ Cancri ...	1885·0 ...	62·0 ...	0·93 ...	Seeliger
	1886·0 ...	57·6 ...	0·95	
η Coronæ Bor. ...	1885·5 ...	173·9 ...	0·61 ...	Doberck
	1886·5 ...	182·2 ...	0·65	
ζ Herculis ...	1885·5 ...	90·3 ...	1·49 ...	Doberck
	1886·5 ...	85·3 ...	1·50	
μ^2 Herculis ...	1885·5 ...	285·6 ...	0·80 ...	Doberck
	1886·5 ...	296·5 ...	0·76	

Dubjago's orbit of β Delphini (Burnham 151) gives for 1885·6, Pos. 238°·1, Dist. 0″·28.

TYCHO'S NOVA OF 1572.—Some years since it was shown by Prof. Wolf that this object was observed by Lindauer at Winterthur on November 7, 1572, and it is equally certain that it was seen by Maurolycus at Messina at its meridian transit on the following evening, though there appears to be some confusion between altitude and declination in his published description. It was not seen by Tycho until November 11.

In 1808 the Abbé Scina, in a work printed at Palermo, entitled "Elogio di Francesco Maurolico," referred to his observations of this star, apparently given in the first instance in a special treatise written by Maurolycus (*Judicium de nova stella*), to which Lalande alludes in his Bibliography, and subsequently in 1613 in a life of the astronomer written by his nephew. According to Clavius, Maurolycus thus records his first observation of the star: "Hanc ego stellam in hoc Messanæ horizonte observans in meridiano extantem circa tertiam noctis horam reperi altitudinem ejus esse 62. Unde conjecturam feci eam locari quasi, in summitate circuli arctici, ut distet hic a meo vertice per gradus 28, ac proinde ab æquatore per gradus 66½ fere, quoniam Messanæ latitudo habet gradus 38½, et eam sitam in puncto, in quo colurus æquinoctiorum secat arcticum circulum, aut ipsi puncto vicinissimum."

According to Argelander the place of the star for 1573·0 was in right ascension 0h. 1m. 52s., declination 61° 46′·4; the sidereal time at mean noon at Messina on November 8 was 15h. 49m. 50s., and consequently the star was on the meridian at 8h. 10m. 41s. mean time, or at 8h. 24m. 46s. apparent time, 3h. 24m. after sunset, and, the latitude of Messina being 38° 11′, the meridian altitude was 66° 25′, which was the distance from the equator given by Maurolycus. Nevertheless the Abbé Scina did not agree with Piazzi's suggestion that there was a typographical error in Clavius, and that 61½° should be substituted for 66½°. The only alternative, however, would point to an error of 4° or 5° in the observation (or estimation), and Scina writes of Maurolycus at this time that he was "très-avancé en âge (il avait alors 78 ans) dépourvu d'instrumens, accablá d'infirmités." . . . Zach sought unsuccessfully for the special work by Maurolycus, as well as for his "Life" by his nephew; Lalande gives no particulars of the former, and hence recourse has to be had to Clavius, who, as stated above, made some extracts from the *Judicium*.

ASTRONOMICAL PHENOMENA FOR THE WEEK, 1885, JUNE 21–27

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

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At Greenwich on June 21

Sun rises, 3h. 45m.; souths, 12h. 1m. 30·5s.; sets, 20h. 18m.; decl. on meridian, 23° 27′ N.: Sidereal Time at Sunset, 14h. 19m.

Moon (Full on June 27, 11h.) rises, 14h. 14m.; souths, 19h. 44m.; sets, 1h. 5m.*; decl. on meridian, 8° 24′ S.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian ° ′
Mercury ...	3 12	11 29	19 46	23 33 N.
Venus ...	4 38	12 58	21 18	23 51 N.
Mars ...	2 4	10 0	17 56	20 26 N.
Jupiter ...	9 6	16 13	23 20	12 9 N.
Saturn ...	3 43	11 52	20 2	22 30 N.

* Indicates that the setting is that of the following day.

Phenomena of Jupiter's Satellites

June	h. m.		June	h. m.	
21	21 9	I. occ. disap.	25	22 30	III. ecl. reap.
22	20 47	I. tr. egr.	27	20 23	I. tr. ing.

The Phenomena of Jupiter's Satellites are such as are visible at Greenwich

June	h.	
21	—	Sun at greatest declination north; longest day in northern latitude.
24	8	Mercury at least distance from the Sun.
26	20	Venus at least distance from the Sun.
27	15	Mercury in superior conjunction with the Sun.

GEOGRAPHICAL NOTES

THE last issue of the *Izvestia* of the Russian Geographical Society (xx., 6) contains an interesting paper, by M. Kosyakoff, topographer, who accompanied, in 1882, Dr. Regel during his journey through Karategin and Darvaz. The paper deals almost exclusively with the topography of the explored region, and thus gives a plain description of the explored routes, containing the necessary topographical data for forming an opinion on the much-debated questions as to the orography of that part of the Pamir region. A route-map, on the scale of ten miles to an inch, accompanies the paper. Starting from Penjkent, M. Kosyakoff soon reached the 9800 feet high lake, Kouli-kalam. Then he crossed the 12,000 feet high and snow-covered Badkhana Mountains which separate the Zarafshan from the upper Surkhab, tributary of the Fan, and continuing to make his way amidst deep and rocky mountain-gorges, he soon reached the lake, Iskander-kul, 7120 feet above the sea-level. Thence, crossing the Mura Pass, richly clothed with vegetation on its northern slope, the expedition descended to Karatag and Hissar, and, by a route quite suitable for carriages, they proceeded further to Kabadian. A good route along the Waksh River brought Dr. Regel and his travelling companions to Kurgantube; but, to reach Koulab, they had to cross the Tash-robat Pass, all covered from top to foot with pistach trees. From Kulab, which is more animated than Kabadian, the expedition went to the rich Mumin-abad Valley, peopled with Tadjiks agriculturists; thence to the twenty-five villages of the Dara district, and, continuing their journey north-east on the right bank of the Pendj, they soon reached Kala-i-khumb. The Pendj River being there but thirty-five miles distant from Tavil-dara on the Waksh, the expedition went there before proceeding further up the Pendj, and followed the upper Waksh in a north-east direction for some fifty-five miles. From Kala-i-khumb, M. Kosyakoff made a further very interesting excursion up the Pendj and its tributary, the Vantch, up to its source, whence he was compelled by a fever to return to Kala-i-khumb and thence to Samarcand. The map published by the *Izvestia* contains, moreover, the very interesting route from Tavil-dara to Bal-juan, and thence to Hissar, and further west to Baisoun, Anar-bulak, and Yar-tube.

AMONG the works announced for this year by the Russian Geographical Society we see the last fascicule of the valuable "Geographical and Statistical Dictionary of Russia;" the atlas of maps to accompany Baron Kaulbars' work on the delta of the Amu-Daria; a geognostic map of the shores of Lake Baikal, by M. Chersky; the work of Dr. Sperck on the Amur region; and a work by M. de Vollan on the songs of Ugrian Russians. There is promised, also, the long-expected results of the great survey of Siberia, from the Ural Mountains to Lake Baikal, accomplished in 1874. The commander of the expedition having died since, the work had to be given for calculations to other persons; but now the name of M. Tillo, who has undertaken its publication, is a guarantee that this capital work will not be lost to science.

DR. FISCHER, of the University of Marburg, the author of a monograph on the climate of Mediterranean countries, read a paper before a recent meeting of the Verein für Erdkunde at Halle on the morphology of the coasts of the Mediterranean, which is reprinted in the *Hallische Zeitung*. "The Mediterranean," he said, "was specially important for some investigations into physical geography, for it has been the theatre of a long history, and we have therefore information about its coasts extending over many centuries. Although it washes the shores of three continents, this sea exhibits a striking similarity in its *fauna* and *flora* everywhere. It must, therefore, in its present form, belong to one of the most recent geological periods, even though particular basins may be much older. It owes its origin to great movements in the crust of the earth, and the form of its coasts is attributable to the same cause, modified by more recent influences. In the present coast formation in the north-western basin, two different types are perceptible, which may most conveniently be designated as the North Sicilian and the Languedoc types. If we follow the coast of Italy from Naples, then the Sicilian and North African coasts around to the Straits of Gibraltar, we meet with twenty-two smaller bays having the form of a semicircle. Their sizes do not vary greatly, the chord of the smallest being 15 km., that of the largest 65, and that of the great majority between 30 and 35 kms. Over this extent the coasts are almost everywhere precipitous, and a short distance from the shore the sea deepens rapidly. How has this formation arisen?" Quoting Suess's "Das Antlitz der Erde," Dr. Fischer said, "there appeared to be all along this coast a great fissure in the crust of the earth. The formation of the Appennines, the Atlas and the occurrence of volcanic phenomena along the whole line would point to this. But this would not account for the bays here mentioned; many of these are probably due to the sea washing away the softer from amongst the harder rocks. The projecting headlands are hard, old, crystalline rocks, while inside are the newer and softer kinds. These inlets, too, are not found everywhere along the coast, but only where the harder rocks are present. That the coasts here are greatly exposed to denudation by the action of the waves is shown by the numerous caves and cliffs, and the violent surge which beats against the vast harbour-works of the French on the coast of Algeria. The prevailing winds there are north and north-east, and thus assist the waves. Another factor is the current, which flows eastwards along the north coast of Africa from the Straits of Gibraltar. This meets the projecting capes and headlands, which deflect part of it into the bays, creating in the latter a counter-current which acts as a scour, keeping the bottom free from alluvium, and also exercising its influence on the semi-circular formation of the inlets. The Bay of Tunis is an exception. This is much deeper than the others, and the currents cannot therefore exercise the same influence over it. The alluvium is deposited, the River Medjerda brings down its contribution, and the result is a constant formation of land there. This bay belongs rather, on this account, to the second type, existing on the Mediterranean coasts of Northern Italy and Languedoc. The Tuscan coast was originally similar to that of Lower Italy, but it has now been altered beyond recognition. Here, to the west of the Appennines, there is a wide district with easily-denuded rocks. The rivers, especially since man has so disafforested the region, bring down vast quantities of alluvium. The current which flows into the Tyrrhenian Sea is deflected northward along the coast, and causes the deposit of the alluvium inshore, so that the ancient bays are gradually silting up. In ancient times the shores of this now harbourless sea had numerous bays, and Tyrrhenians were skilful navigators. At the mouth of the Arno the operation is best seen. Pisa, which was founded as the port on the sea at the mouth of the river, was no longer on the coast in Strabo's time, and is now some distance inland. The land-formation on the coasts of Languedoc is even more striking. In former times there were steep shores, protected by a row of islands, behind which lay a calm inland sea, on which the city of Narbonne was built. The sea silted up from inside and out—from inside by the rivers, from outside by the currents created by the frequent south-east winds which conveyed the alluvium of the eastern rivers, especially the Rhone, and deposited it there. The islands became joined to the land, and the inland sea disappeared. Thus arose on these coasts the flat plains, behind which are small lakes and marshes.

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